

REMARKS

The Applicant has carefully reviewed and considered the Examiner's Action mailed June 20, 2007. Reconsideration is respectfully requested in view of the foregoing amendments and the comments set forth below.

By this Amendment, claims 1 and 23 are amended, dependent claim 25 is amended, and claims 7 and 24 are canceled. Claims 23 is presented as an independent claim with the features of original claims 23 and 24. Accordingly, claims 1-6, 8-23 and 25-30 are pending in the present application.

Claims 1, 3-10, 14-21, 23 and 27 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,699,509 to Kamiya et al. (hereinafter referred to as "Kamiya"). Claims 2, 11-13, 22, 24-26 and 28-30 were rejected under 35 U.S.C. §103(a) over Kamiya. These rejections are traversed.

Kamiya describes a lubricant contamination measuring device where an optical path is provided between a light source window at a light source side and a light receiving window at a light receiving element side. In particular, an optical sensor 1 is provided with a light-emitting diode 11 and a photodiode 12, which are covered with glass windows 21 and 22 that oppose each other and are spaced by a predetermined gap. 3. The gap is filled with lubricant that is measured. In the process taught by Kamiya, the light-emitting diode-photodiode arrangement can be submerged into the fluid to be analyzed.

The configuration of the arrangement disclosed by Kamiya differs from the claimed optical sensor of independent claim 1. All of the embodiments disclosed by

Kamiya have a light source 11 and a receiving element, which are kept at a fixedly determined distance to each other by spacers, such as spacer ring 4 having U-shaped projections 41, 42 and 43 (see Figure 2 of Kamiya). Column 5, lines 34-68 of Kamiya describes the embodiment shown in Figure 1 and the spacer illustrated in Figure 2. Kamiya stresses the importance of the optical path 3 being precisely defined by the thickness of the projections.

For the embodiments according to Figures 6 - 13 of Kamiya, at least one of the windows is rounded on the front or extends at an acute angle and the windows touch one another, so that the spacer is realized by the adjoining windows. Thus, the mandated, precisely defined optical path of Kamiya is achieved. It is explicitly stated in column 2, lines 29-58 of Kamiya that the essential feature of the disclosed arrangement that the distance must be unchangeable since otherwise no reproducible measuring values can be obtained. That is, variations in the measurement occurs as the relationship between the carbon concentration and the light transmittance varies widely.

The claimed invention, however, is based upon a completely different approach. The distance between its transmitting element and the receiving element is not fixedly predetermined. On the contrary, the distance between the transmitting element and the receiving element can be changed because the transmitting unit and the receiving unit can be mounted position-adjustable on the holder. See paragraph [00042] of the present application.

Contrary to the Examiner's explanations, this feature that was originally in claim 7 is neither anticipated nor suggests itself based on Kamiya's disclosure in Column 5, lines 14-33. The variation in the length of the absorption distance (optical path length D)

according to lines 14-33 in column 5, cited by the Examiner, in particular is problematic in that the rate of lubricant replacement between the light source and the light receiving element is low so that the new concentration value cannot be quickly indicated. One of ordinary skill employing commonsense would not consider column 5, lines 14-33 as disclosing that the transmitting unit and the receiving unit “can be secured adjustably in different positions on the measuring head, as recited in independent claim 1. To the contrary, Kamiya states, in lines 25-26 of the cited passage, that “the optical path gap must be precisely defined.” That is, Kamiya emphasizes that variations are to be avoided between the light source and a receiving element and this is achieved by providing spacers between the light source and the receiving element. Consequently, independent claim 1 is not anticipated by Kamiya because the reference fails to disclose all of the structure of the claimed invention. Withdrawal of the rejection of claims 1, 3-10, 14-21, 23 and 27 under 35 U.S.C. §102(b) is respectfully requested.

An essential feature of the claimed invention set forth in independent claim 23 is that the measuring values are independent of the specific sensor parameters as result of the calibration operation according to the recited determination of extinction values E_{meas} . As explained in paragraphs [00047]-[00054] of the present application, a dye concentration to be determined is defined by the measuring values I_o , I , I_{meas} , as well as the predetermined reference dye concentration C_{cal} . The determination of the dye concentration does not depend on sensor-specific parameters. Nowhere does Kamiya disclose a receiving element that receives signals for a dye-free and/or particle free reference medium, let alone using such signals to modify Kamiya with the recited reference extinction value E_{cal} that is achieved through a claimed ratio of signals received

at the receiving element. It is respectfully submitted that the combination of features in claim 23 and 25-26 is neither anticipated nor suggested based of Kamiya.

Contrary to the Examiner's statements, a sensor-specific and a particle-specific reference extinction value cannot be derived from the formula in column 4, line 32 of Kamiya because it relates only to the measured absorption of a fluid with particles to an absorption value for a fluid without particles. It is only through the present claimed invention set forth in claim 23 that a referencing would lead to measuring values which are independent of the sensor parameters to achieve calibration. According to claim 23, two reference measurements are used, namely for a reference medium without particles and for a reference medium with known particle concentration. It is only in this way that it is possible to obtain measuring values that are independent of the sensor parameters ([00054] of the present application).

Consequently, the Examiner's statement in the Action that the subject matter claim 24 (now incorporated in claim 23) simply represents a method for calculating a higher measuring accuracy is refuted. Withdrawal of the rejection of claims 2, 11-13, 22, 24-26 and 28-30 under 35 U.S.C. §103(a) is respectfully requested because the sole applied reference to Kamiya teaches against the recited "transmitter unit and receiving unit that are secured adjustably in different positions to a measuring head" required by claims 1-6, 8-22 and 27-30, and Kamiya fails to disclose the signals received at the receiving element for a dye-free and/or particle -free reference medium being, let alone employing this information to determine the dye concentration or particle concentration as claimed in independent claim 23 and dependent claims 25-26.

For the above stated reasons, it is submitted that all of the claims are allowable over the prior art of record and are in condition for allowance. Therefore, it is respectfully requested that this application be passed to issuance with claims claims 1-6, 8-23 and 25-30 being allowed over the prior art of record.

Should the Examiner believe that a conference would advance the prosecution of this application, he is encouraged to telephone the undersigned counsel to arrange such a conference.

Respectfully submitted,



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